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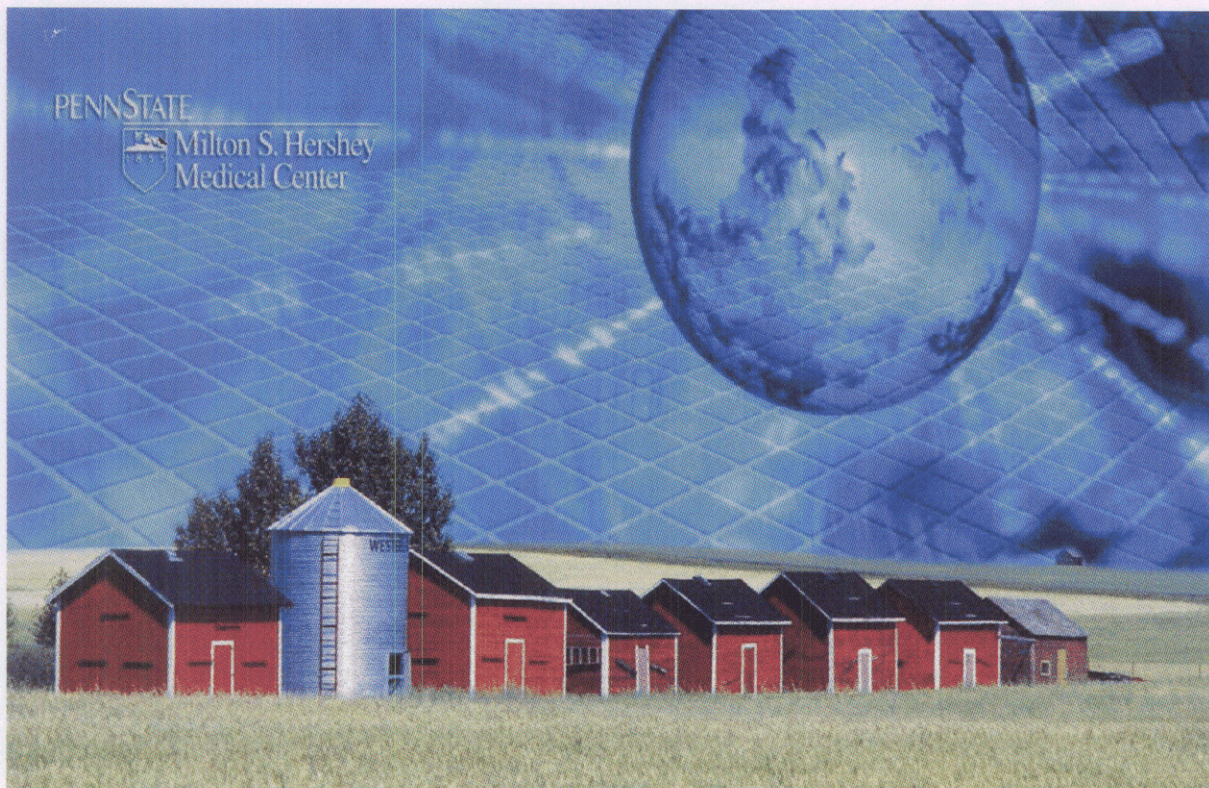
**Enhancing Access to Discovery:
Linking Rural Hospitals to Advanced Academic Medicine
Through IT Connectivity**

**The Pennsylvania State University
The Penn State Milton S. Hershey Medical Center**

Thomas Abendroth, M.D., Principal Investigator

**Proposal to the
FCC Rural Health Care Pilot Program
(WC Docket No. 02-60)**

May 7, 2007



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Identify the organization that **will be legally and financially** responsible for the conduct of activities supported by the fund:

Penn State Milton S. Hershey Medical Center (PSHMC)

The Penn State Milton S. Hershey Medical Center is a unique resource for rural Pennsylvania. Founded in 1963 through a gift from The Milton S. Hershey Foundation, Penn State Milton S. Hershey Medical Center is one of the leading teaching and research hospitals in the country. The 500-bed Medical Center is a provider of high-level, patient-focused medical care. Annually the Medical Center admits more than 26,000 patients, accepts more than 766,000 outpatient visits, receives nearly 48,000 patients for emergency room visits and performs more than 23,000 surgical procedures. The Medical Center campus also includes Penn State College of Medicine (Penn State University's medical school), Penn State Cancer Institute, and Penn State Children's Hospital—the region's only children's hospital.

Pennsylvania State University College of Medicine

Enrolling its first students in 1967, the College of Medicine at Penn State Milton S. Hershey Medical Center confers the Doctor of Medicine degree and, in conjunction with Penn State's Graduate School, offers Doctor of Philosophy and Master of Science degrees in anatomy, biochemistry and molecular biology, bioengineering, cell and molecular biology, genetics, integrative biosciences, microbiology and immunology, neuroscience, pharmacology, and physiology. In addition, the College of Medicine offers Master of Science degrees in laboratory animal medicine, health evaluation sciences, and homeland security.

Collectively, the College and Medical Center boasts a portfolio of approximately \$100 million in funded research. Projects range from the development of artificial organs and advanced diagnostics to groundbreaking cancer treatments and understanding the fundamental causes of disease.

As a special mission campus of the Pennsylvania State University, the goals of the Penn State Hershey Medical Center are grounded in the land-grant mission of research, teaching and service established at the founding of the university. As Penn State President Graham Spanier noted at the

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Pennsylvania General Assembly unanimously adopted resolutions recognizing Penn State's status as the state's sole land-grant university. "While the University's agricultural origins remain at the core of its land-grant mission the concept has broadened to address today's needs. We conduct more than **\$545** million in scientific research ..and continue to serve not only agricultural interests, hut nearly all sectors **of** Pennsylvania industry. Through our outreach and extension programs, we reach nearly **5** million Pennsylvanians every year."

This same spirit of service to the citizens of the Commonwealth is exemplified in our mission: Penn State Milton S. Hershey Medical Center, Penn State College of Medicine and Penn State Children's Hospital arc committed to enhancing the quality of life through improved health, the professional preparation of those who will serve the health needs of others, and the discovery of knowledge that will benefit all.

While Pennsylvania is home to several academic medical centers, such as the University of Pittsburgh Medical Center, the Hospital of the University **of** Pennsylvania, Drexel University College of Medicine and Temple University School of Medicine, all of these institutions arc based in the dominant urban centers of Philadelphia and Pittsburgh. Unlike peers in these two cities, the Penn State Milton S. Hershey Medical Center is located in the agrarian landscape of central Pennsylvania and serves a geographically dispersed and predominantly rural population. **As** part of the larger Pennsylvania State University, outreach is an integral part of our land-grant mission; our outreach philosophy is expressed in our 2006 annual report, "By enabling providers in local areas to deliver a higher level of care, we are increasing the Medical Center's presence throughout central Pennsylvania in a practical and compassionate way." We achieve this part of our mission through an established network of affiliated hospitals serving a significant portion of the rural counties in the Commonwealth. Across this network the Penn State Milton S. Hershey Medical Center (PSHMC) fosters the delivery of advanced medical care to patients in their home communities.

PSHMC has been recognized for the impact of our research on public health, most notably foundational work in the development of a vaccine for the Human Papilloma Virus, a

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recognized precursor of cervical cancer. The Pennsylvania State University College of Medicine also is actively responding to meet the needs of underserved communities through the growth of our educational programs. The College of Medicine continues to expand the number of students we can enroll in medical school in response to a projected shortage in key specialties; The Pennsylvania State University College of Medicine, currently enrolls more than 600 students annually. Special recognition is given to the education of primary care providers.

The Penn State Hershey Medical Center has experience in developing multi-provider networks to deliver advanced care to rural communities. For example, the Penn State Cancer Institute, an institutional member of the Appalachia Cancer Network (see Map 1 in Appendix A) provides rural residents with access to cancer clinical trials through its network of affiliated providers. The Penn State Cancer Institute delivers cancer services throughout central and eastern Pennsylvania. The Institute's mission includes clinical care, research, education and community outreach. Together, more than 5,800 new cancer patients yearly are treated through the Institute's facilities. The Penn State Cancer Institute brings the benefits of cancer-related research and education at Penn State's College of Medicine to the care of patients across the Pennsylvania Appalachian highlands.

The Pennsylvania State University has 25 campuses throughout the Commonwealth of Pennsylvania including the Penn State World Campus, a unique outreach initiative that makes a Penn State education available to anyone in the world. The Penn State campuses represent an integrated network that makes access to Penn State resources available to every person in Pennsylvania. The Penn State Milton S. Hershey Medical Center operates 21 clinic and administrative locations in addition to the main campus. Finally, the Penn State Milton S. Hershey Medical Center provides care to patients through a network of affiliated hospitals including: the Mount Nittany Medical Center in Centre County, the Susquehanna Health System in Lycoming County and the Wyoming Valley Health Care System in Luzerne county.

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Since its founding, the Penn State Milton S. Hershey Medical Center has been committed to serving the needs of the rural residents of Pennsylvania and this project will enable us to extend our expertise in ways that enable the delivery of advanced care to these residents in their own communities. The vision of this project is exemplified by the following quote from Dr. Hal Paz, Penn State Senior Vice President for Health Affairs; Dean, Penn State College of Medicine and CEO of the Penn State Hershey Medical Center, “Cancer is a disease that doesn’t travel well. It is incumbent on us as an academic medical institution to develop translational initiatives that get patients the care they need in their home environment. At the same time, the resources of Penn State Hershey Medical Center stand ready to provide high end care that cannot be provided elsewhere.” The Pennsylvania State University through The Penn State Milton S. Hershey Medical Center will be legally and financially responsible for the conduct of activities supported by the fund. Dr. Thomas Abendroth, as the principal investigator, is responsible for the day to day expenditures of the funds and adherence to the final FCC approved budget.

Identify the goals and objectives of the proposed network

The goals of the proposed network are to connect several hospitals serving rural and underserved populations in Pennsylvania to the Penn State Milton S. Hershey Medical Center. The primary goal of establishing these connections is to strengthen the clinical programs and services these providers can offer their communities and patients. The proposed network will facilitate this process by enabling continuing medical education programs that connect leading-edge researchers at the Hershey Medical Center with physicians in community-based practice allowing the rapid transfer of new research findings and patient care protocols to rural and underserved communities. Robust IT infrastructure is necessary to enable image and data transfers necessary for care coordination.

Our specific objectives are:

1. To link the Penn State Hershey Medical Center to partner hospitals in order to facilitate continuing medical education that advances the level of patient care at each hospital.
2. To develop an IT infrastructure that enables the rapid exchange of clinical information for consultation between academic medical center based physicians and community based providers.
3. To develop an IT infrastructure that facilitates remote monitoring and management of patients in rural communities by tertiary and quaternary care providers.

In addition to these project objectives we have unique site-specific objectives as follow:

- Mount Nittany Medical Center. (MNMC).
 - Replace shared 10megabit connection between the Penn State Hershey Medical Center and the Mount Nittany Medical Center, with a dedicated 100megabit connection.
 - Utilize dedicated bandwidth to enable real-time remote viewing by Penn State Heart and Vascular Institute physicians of interventional cardiology procedures being performed in the cardiac catheterization unit at MNMC. Dedicated bandwidth is necessary to ensure that the interventional cardiologist at the Penn State Hershey Medical Center campus can view the procedure while it is being performed in order to determine whether the patient can be treated locally or should be transported for more advanced care, such as open heart surgery. This intended use is required under a Pennsylvania Department of Health waiver

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program designed to enable life-saving interventional cardiology procedures (such as balloon angioplasty and stent placement) in hospitals that do not have open heart surgery on site.

- o Utilize connection for continuing medical education using existing videoconferencing (e.g., PolyCom) technology at each facility.
 - o Utilize connection to enable remote Electronic Medical Record (EMR) access for PSHMC Heart and Vascular Institute physicians performing clinical procedures at MNMC to facilitate care coordination and follow-up.
 - o Utilize connection to enable shared tumor board meetings between disease program clinicians from the Penn State Cancer Institute at PSHMC and MNMC Cancer programs.
 - o Utilize connection to host Acrobat Connect (formerly Macromedia Breeze) supported consultations between physicians in the cancer programs at PSHMC and MNMC.
 - o Utilize connection to facilitate Tumor Registry and Cancer Clinical Trial data exchange between MNMC and PSHMC.
- **Susquehanna Health.**
 - o Establish a 100 megabit connection between Snsqnehanna Health and the Penn State Hershey Medical Center.
 - o Utilize connection for continuing medical education using existing videoconferencing (e.g., PolyCom) technology at each facility.
 - o Utilize connection to host Acrobat Connect (formerly Macromedia Breeze) supported consultations between physicians in the cancer programs at PSHMC and Susquehanna Health.
 - o Utilize connection to facilitate Tumor Registry and Cancer Clinical Trial data exchange between PSHMC and Susquehanna Cancer program.
 - o Utilize connection to deliver Grand Rounds case review between PSHMC and Susquehanna Health.
 - o Utilize connection to facilitate consultation, Tumor Registry and Cancer Clinical Trial data exchange.
 - o Utilize connection to enable remote Electronic Medical Record (EMR) access for Penn State faculty performing Cardio-Thoracic surgical cases at Susquehanna Health to facilitate case review, care coordination and case consultation and follow-up.
 - **Wyoming Valley Health Care System (WVHCS).**
 - o Replace existing T1 line with a 100 megabit connection between the Penn State Hershey Medical Center and WVHCS.
 - o Utilize Connection to enable remote Electronic Medical Record (EMR) access for Penn State faculty performing Neurosurgical cases at WVHCS to facilitate case rview, care coordination and case consultation and follow-up.

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- o Utilize connection to enable physician oversight of nurse practitioners in the Neonatal Intensive Care Unit (NICU) at WVHCS. PSHMC faculty will serve as medical director for the WVHCS NICU and coordinate care remotely. Dedicated bandwidth is necessary to enable image and data transfer necessary for individual care coordination for these infants.

In addition to the objectives outlined above for each participating hospital there are network-wide programmatic objectives which will be facilitated through the proposed IT infrastructure.

- **Continuing Medical Education.**

The medical faculty of the Penn State Hershey Medical Center and Penn State College of Medicine would utilize the proposed network to provide the medical staff at each of the participating hospitals with remote classes, seminars, grand rounds, and other educational opportunities that would meet CME needs and enable individual case review through clinical focused forums such as Tumor Boards.

- **Image and Data Transfer**

The proposed network would enable physicians at each of the participating hospitals to share clinical data and digital images with medical faculty at the Penn State Hershey Medical Center quickly and securely. The ability to send clinical information electronically eliminates delays in clinical decision making and facilitates efficient diagnosis and treatment decisions.

- **Electronic Medical Record (EMR) Access**

One of the central challenges in coordinating care is the inability to monitor patients as they are transferred between facilities and providers. The proposed network will enable community based physicians to review medical record information on their patients when they are transferred to the Penn State Hershey Medical Center for advanced care. EMR access will also enable Penn State Hershey Medical Center physicians to monitor patients when they return to their home community so that patients do not have to travel unnecessarily.

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Estimate the network's total costs for each year

We propose to link the partner organizations through Level 3 Communications for both cost and network grid coverage reasons. Level 3 Communications has an established scalable grid that currently extends to each of the participating hospitals. See Appendix A, Map 2 for Level 3 Network Grid. The Penn State Milton S. Hershey Medical Center and Mount Nittany Medical Center already have service relationships with Level 3. These established connections lower the installation costs associated with this proposal.

The estimated cost for the first year comprise one-time costs including connection costs and associated network hardware and installation fees as well as ongoing costs such as line leasing fees. The salary of a network administrator is also incorporated in the estimated budget; this salary will be borne by the Penn State Milton S. Hershey Medical Center if this proposal is funded. Finally the proposal also includes a network development study to evaluate the costs of building out network grid capacity to enable the expansion of the proposed network to additional rural and critical access hospitals in Pennsylvania including the Pennsylvania Mountain Health Alliance hospitals. (See appendix B for addresses and RUCA codes for the PMHA Hospitals).

The one time costs for the network are estimated to be \$232,440, which includes hospital to hospital connections as well as hospital to physician practice connections. The estimated first year costs for line-leasing fees and other recurring network costs is \$234,946. Additional costs included in the proposal are \$350,000 for a one time comprehensive inventory of infrastructure and capacity of potential network partners, as well as, a comprehensive study of full build-out approaches for expanding the proposed network to PMHA hospitals and other rural hospitals within the network service area. If this proposal is funded Penn State Hershey Medical Center will hire a network administrator who will be dedicated to this network. The proposed annual salary for this individual is \$75,000 plus associated fringe benefits at 26.6%. The network administrator salary is not included in the

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proposal for FCC funding but is noted here as part of the estimated costs associated with the network. The total requested funding for this proposal is \$817,386. Our request is for \$694,778 from FCC Rural Health Care Pilot Program funds, the remaining \$122,608 will be covered by the participating hospitals.

Detailed costs accounting for connecting each member hospital and associated physician practices are provided in Appendix C.

Describe how for-profit network participants will pay their fair share of the network costs.

The for-profit network participants associated with this proposal include the 30 physician practices intending to link to the network through their respective hospitals. The costs of connecting these practices to the proposed network will be shared by the practices and their sponsoring hospital as reflected in the individual hospital commitment letters. See Appendix D for letters of commitment from partner institutions.

Identify the source of financial support and anticipated revenues that will pay for costs not covered by the fund.

Each partner commits to covering the non-covered costs of this proposal into their operating budget for IT services. Operating budgets are derived from patient care revenues at each partner institution. The Penn State Milton S. Hershey Medical Center and affiliated network partners in this grant may also seek USDA grant funding through the Rural Development Distance Learning and Telemedicine program to cover some or all of the costs not covered by the FCC Grant, however, each partner institution is prepared to pay for non-

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covered costs from operating funds. See Appendix D for commitment letters from each partner hospital

Financial Indicators by Participating Hospital

Hospital	Location	Net Patient Revenue (millions)	Operating Margin	Total Margin
Mount Nittany Medical Center	State College	\$110	3.13%	3.97%
Penn State Hershey Medical Center	Hershey	\$507	8.78%	9.02%
Susquehanna Health	Williamsport	\$136	1.29%	2.10%
Wyoming Valley Health Care System	Wilkes Barre	\$185	-1.56%	0.65%

Source: Pennsylvania Health Care Cost Containment Council 2005 Hospital Financial Analysis Report

List the health care facilities that will be included in the network

The participating hospitals, the current connection to the Penn State Hershey Medical Center and the description of the market served by each hospital is described below. Appendix A includes a map of Pennsylvania's rural counties developed by the U.S. Census Bureau and the Center for Rural Pennsylvania. These designations are referred to in the market descriptions below and generally match to the Universal Services Administrative Company (USAC) definitions used by FCC for this grant process. USAC Definitions are noted relative to each specific hospital market area.

Mount Nittany Medical Center

Currently there is a 10 mbps connection between the Penn State Hershey Medical Center and the Mount Nittany Medical Center. However, this 10 mbps connection handles all

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internet traffic as well as digital radiology, data transfer and extensive electronic medical record (EMR) access by community physicians. We propose replacing the 10mbps connection with a 100 mbps connection to enable the expansion of the EMR network. We also plan to dedicate part of the bandwidth to enable real-time remote viewing of interventional cardiology procedures. As part of a joint interventional cardiology program Penn State Hershey Medical Center physicians will view cardiac catheterization procedures from the Penn State Hershey Medical Center campus in real-time as they are being performed at the Mount Nittany Medical Center. The goal is to provide consultation to the Mount Nittany Medical Center physician as they evaluate the extent of the damage to the patient's heart and determine whether to operate locally or transfer the patient for advanced cardiac surgery at the Penn State Hershey Medical Center. This kind of real-time observation requires robust dedicated bandwidth to deliver cardiac images without signal delay.

In addition to the interventional cardiology program the Mount Nittany Medical Center is also a founding member of the Penn State Cancer Institute and participates extensively in cancer clinical trials as part of the Appalachian Cancer Network. These trials require extensive data and image transfer that will be enhanced by the proposed network. The Mount Nittany Medical Center is located in State College, Pennsylvania the home of the Pennsylvania State University. The Penn State Hershey Medical Center is located 100 miles away from the main campus of Penn State. As a result, many patients are treated in both hospitals on an ongoing basis for cancer care, cardiac care and other acute illnesses. The proposed network will facilitate EMR access and data exchange over a secure connection, improving care coordination and follow-up for members of the State College community.

As the only hospital in Centre County, the 201 bed Mount Nittany Medical Center serves all residents of this geographically diverse area, from Old-Order Amish families to world-renowned research faculty at Penn State. Outside of State College where the Pennsylvania State University is headquartered, Centre County is home to several small,

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isolated, rural towns and villages. In addition, the primary market area of Mount Nittany Medical Center also includes several USAC designated rural counties including, Clearfield, Clinton, Elk, Huntingdon, Juniata and Mifflin. The development of the proposed IT infrastructure will enable us to extend advanced health care services to many of these rural communities through our collaboration with the Mount Nittany Medical Center.

Susquehanna Health

Currently there is no connection between the Penn State Hershey Medical Center and Susquehanna Health. We propose the creation of a 100 mbps connection between the two hospitals to facilitate continuing medical education and the growing clinical collaboration between our two organizations in cancer care, heart and vascular care and organ transplant coordination.

In July 1994, an alliance was formed among three area hospitals signaling the beginning of a new era in healthcare for the region. This alliance, Susquehanna Health System, (**SHS**) brings together The Williamsport Hospital & Medical Center, Divine Providence Hospital and Muncy Valley Hospital, along with all their subsidiaries, into one fully integrated healthcare system that provides high quality, compassionate, accessible and cost effective healthcare to thousands of residents in the region and has received national recognition for its healthcare leadership.

Located in central Pennsylvania, **SHS** is made up of the three hospitals with a total of 454 licensed acute and 139 long term care beds, along with a skilled nursing unit, home care division, physician services and ambulance service. Its Emergency departments have a total of some 54,000 visits each year and its Birthplace welcomes 1300 babies annually. And while Susquehanna Health System is relatively young, the hospitals that form the foundation of the healthcare system are very much a part of the area's rich history, and have a long standing tradition of providing care to generations of area families.

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Susquehanna Health continued its tradition of serving the regional community in 2001 when Bucktail Medical Center, Jersey Shore Hospital and Muncy Valley Hospital converted to Critical Access Hospital (CAH) status. As CAH's, each hospital had to establish a referral agreement with a tertiary care hospital in their service area. Each selected The Williamsport Hospital to fulfill this needed role. From this agreement the Susquehanna Valley Rural Health Partnership was formed. In April 2002, the members of the SVRHP formally incorporated and applied for 501(c)(3) (independent not for profit) status, which was granted in July 2002. During this same period, membership expanded to include the North central Pennsylvania Area Health Education Center (NCAHEC) and the Lycoming County Medical Society. NCAHEC's mission is to assist rural communities meet their primary health needs by facilitating recruitment, retention, education and training of providers of primary health care. The Lycoming County Medical Society is the only medical society in the service region, and is dedicated to the preservation of local quality healthcare. The partnership was granted a three-year Rural Health Network Development grant from the Health Resources and Services Administration (HRSA) in September of 2003.

One of the major accomplishments of the Susquehanna Valley Rural Health Partnership that we hope to extend with this proposal is the creation of an IT integration map and implementation plan which includes:

- Established a Local Area Network (LAN) at Bucktail Medical Center;
- Established videoconferencing at all member hospitals;
- Provided Soarian clinical and financial diffusions to Jersey Shore Hospital and,
- Established CareTracker at Bucktail Medical Center

These efforts serve as a model for other network partners to follow as we build out the infrastructure necessary to create similar connections among the grant partners.

With three critical access hospitals as key components of their system, Susquehanna Health is actively serving the needs of rural and underserved communities within their

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primary market area. Beyond Lycoming County, the primary market area served by Susquehanna Health includes five USAC designated rural counties; Bradford, Clinton, Potter, Sullivan and Tioga. Susquehanna Health exemplifies the kind of mutually beneficial organizational arrangement that we plan to establish with this grant; linking an academic health center with local hospitals to extend advanced health care services to Pennsylvania residents in their own communities.

Wyoming Valley Health Care System

Currently there is a T1 (1.544 mbps) connection between the Penn State Hershey Medical Center and the Wyoming Valley Health Care System. We propose replacing the T1 connection with a 100mbps connection between the two hospitals. This connection will be primarily focused on three clinical programs; neurosurgery, perinatology and neonatology. In addition the network will facilitate continuing medical education exchanges (e.g., grand rounds and training of physician extenders, such as physician assistants and nurse practitioners).

The Wyoming Valley Health Care System was founded in 1992 with the merger of two of the regions oldest and most respected health care institutions: *Nesbitt Memorial Hospital* and *Wilkes-Barre General Hospital*. Since that time, it has continued to grow and evolve to provide the most comprehensive health care in Northeastern Pennsylvania.

In addition to Wilkes-Barre General Hospital, Wyoming Valley Health Care System also includes our affiliates:

- Behavioral Health Services of Wyoming Valley – including inpatient and outpatient mental health care and substance abuse services for children, adolescents and adults.
- Heritage House and Wyoming Valley Manor – offering retirement, long-term care and hospice care facilities for patients or seniors.
- Rural Health Corporation – providing primary care and dental services to residents in outlying areas of our community.

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- United Health and Hospital Services (UHHS) –providing primary and obstetric care to the under-served of our community. UHHS also offers the Wyoming Valley Family Practice Residency Program, which provides practical and educational training to student physicians.
- Visiting Nurse Association – providing in-home nursing, personal and hospice care to residents throughout Luzerne and surrounding counties.

Wyoming Valley Health Care System is a comprehensive health care system serving the people of Northeastern Pennsylvania. The primary market area of the Wyoming Valley Health Care System is comprised of Luzerne, Wyoming and Lackawanna counties. Each of these counties is USAC designated as mixed urban/rural. In addition the Wyoming Valley Health Care System serves many rural communities in Carbon, Columbia and Monroe counties. These northern tier communities often confront access issues due to weather conditions that make rural roads difficult to traverse. By linking the Penn State Hershey Medical Center and the Wyoming Valley Health Care System, families confronted with high-risk births or newborn infants who need intensive care, gain access to a coordinated team of highly skilled physicians and nurses working in tandem to deliver advanced neonatal care in their home community. These are the kinds of programmatic efforts enabled by the kind of IT infrastructure we are proposing. Our goal is to build and manage a network that lowers barriers and speeds access to advance education, consultation and collaborative delivery of health care services to people where they live. We believe that receiving care close to home whenever possible, promotes healing, builds trust and strengthens providers who serve rural communities.

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Provide the address, zip code, Rural Urban Commuting Area (RUCA) code and phone number for each health care facility participating in the network

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 Participating Hospital Zip Codes, RUCA Codes and Phone Number

Hospital

Penn State Hershey Medical Center	500 University Dr.	Hershey	PA	17033	I	717 531-8080
Mount Nittany Medical Center	1800 East Park Ave.	State College	PA	16803	1	814 231-7000
Wyoming Valley Health Care System	575 North River St.	Wilkes Barre	PA	18764	1	570 829-8111
Susquehanna Health	777 Rural Ave.	Williamsport	PA	17701	1	570 321-1000

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Indicate previous experience in developing and managing telemedicine programs.

The Penn State Hershey Medical Center has extensive experience managing telemedicine programs primarily in service to our geographically dispersed University Physician Group (UPG) offices. There are 21 UPG and administrative locations across the commonwealth that are connected to the Penn State Hershey Medical Center. Each of these sites receives all of their IT services through the Penn State Hershey Medical Center including access to Connected, the Electronic Medical Record utilized by the Penn State Hershey Medical Center and managed by Penn State Hershey Information Technology staff. These sites also receive digital radiology images as well as financial analysis, billing services and other administrative services (email, file sharing, print sharing, etc.) through the UPG network. The table below shows the distance between the Penn State Hershey Medical Center campus and these locations, ranging from less than one mile to over 100 miles. The majority of the UPG sites have been in active operation and connected to the Penn State Hershey Medical Center IT network for over five years, several have been operating for more than a decade. The experience gained from developing and managing this telehealth/telemedicine network over the last decade gives us confidence that we can effectively develop and manage new telemedicine applications and related IT infrastructure.

In addition to the UPG sites Penn State Hershey Medical Center has established telemedicine connections with several of the partners including Hanover Hospital, Lehigh Valley Hospital and Health Network, the Mount Nittany Medical Center and the Wyoming Valley Health Care System. As founding members of the Penn State Cancer Institute the Lehigh Valley Hospital and Health Network and the Mount Nittany Medical Center are actively engaged in telemedicine applications with the Penn State Hershey Medical Center including collaborative management of cancer clinical trials, active case management and review utilizing Acrobat Connect (formerly Breeze), and joint operations management meetings for the Penn State Cancer Institute. Other telemedicine applications currently deployed across the affiliate network include digital image sharing (including radiographic

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images, echocardiogram information and ultrasound images) for patient consultation, and remote viewing of interventional cardiology procedures by Penn State Hershey Medical Center physicians in tandem with interventional cardiology physicians in State College. The combination of experience in developing and managing the internal partner network (UPG locations) and the external affiliate connections has provided a foundation of capability and skill necessary to extend the network further as proposed in this application. See Appendix E for network architecture diagrams.

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Connected UPG sites and distances from Penn State Hershey Medical Center

UPG Site	Location	Miles From HMC
Apple Hill, York	45 Monument Rd., York	31.4
Behavioral Health	22 Northeast Drive, Hershey	3.5
Broad Street	401 North Broad Street, Philadelphia	95.3
Cherry Drive	Cherry Drive, Hershey	1
Children's Heart Group Outreach	121 Nyes Rd., Harrisburg	9.2
Elizabethtown	1 Continental Dr., Hershey	12
Erford Road	101 Erford Rd., Camp Hill	16
Fishburn Road	845 Fishburn Rd., Hershey	1.8
Fishburn Radiology	845 Fishburn Rd., Hershey	1.4
Front Street	1711 North Front St., Harrisburg	13.3
Governor Drive, Briarcrest	Governor Drive, Briarcrest	0.2
IT Granada	Granada Ave, Hershey	2.2
Jonestown Road, Colonial Park	4813 Jonestown Rd., Harrisburg	12.1
Lancaster Women & Babies	694 Good Dr., Lancaster	26.7
Middletown	3100 Schoolhouse Rd., Middletown	4.3
Nyes Road	121 Nyes Rd., Harrisburg	9.2
Nyes Road Adult Specialties	121 Nyes Rd., Harrisburg	9.2
Nyes Road Children's Heart Group	121 Nyes Rd., Harrisburg	9.2
Nyes Road Radiology	121 Nyes Rd., Harrisburg	9.2
Palmyra	941 Park Drive, Palmyra	5.8
Park Avenue (State College)	1850 E. Park Ave., State College	102.5
Silver Spring	3 Flowers Dr., Mechanicsburg	24.6
Sipe Ave	140 Sipe Ave	0.6
State College Orthopaedics	1850 E. Park Ave., State College	100.5
Vine Street	4000 Vine St., Middletown	4.9
Wilkes Barre Neurosurgery	545 North River St., Wilkes-Barre	105
Wilkes Barre Pediatrics	540 Pierce St., Kingston	106

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Provide a project management plan outlining the project's leadership and management structure, as well as its work plan, schedule, and budget;

The proposed project will be led by the Chief Information Officer (CIO) of the Penn State Hershey Medical Center. Additional leadership for the network will include a Network administrator who will be hired upon successful receipt of the grant funds. This individual will report to the Penn State Hershey Medical Center Chief Information Officer. The Chief Information Officer at each participating organization will serve as the Originating Site Manager for components of the network to be delivered at their hospital. The Network administrator and participating hospital Chief Information Officers will coordinate the project work plan, scheduling work at each participating hospital and budget (including the bidding process for network components). The Penn State Hershey Medical Center Chief Information Officer will be responsible for budget oversight in his role as Principal Investigator for the grant.

The proposed work plan and schedule is outlined in the table on page 29. It is our expectation that full build out of the network to participating hospitals and affiliated physician practices will take nine months. During this time period we also plan to conduct a comprehensive inventory and capacity study with PMHA member hospitals to develop options for extending the proposed network to the rural communities served by these hospitals.

The one time costs for the network are estimated to be \$232,440, which includes hospital to hospital connections as well as hospital to physician practice connections. The estimated first year costs for line-leasing fees and other recurring network costs is \$234,946. Additional costs included in the proposal are \$350,000 for a one time comprehensive inventory of infrastructure and capacity of potential network partners, as well as, a comprehensive study of full build-out approaches for expanding the proposed network to PMHA hospitals and other rural hospitals within the network service area.

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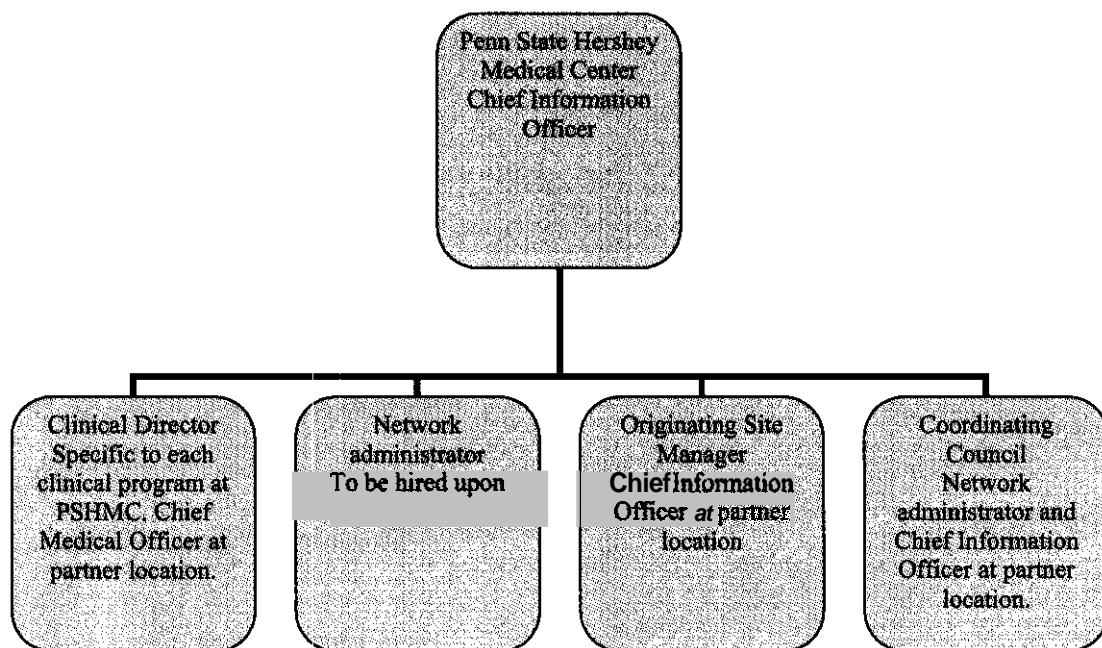
Penn State Hershey Medical Center
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 Work Plan and Schedule
 Based on projected grant award determination of September 2007

Task/Timeline	Duration	Start Date	Stop Date
Recruit FCC Grant Network administrator.	60 days	9/1/2007	11/1/2007
Initiate bid process for network hardware installation and connectivity.	30 days	9/1/2007	10/1/2007
Review bids with FCC.	30 days	10/1/2007	11/1/2007
Award installation and Connectivity contract and initiate installation at each participating hospital.	30 days	11/1/2007	12/1/2007
Initiate bid process for comprehensive inventory and capacity study with PMHA Hospitals.	30 days	11/1/2007	12/1/2007
Review bids with FCC.	30 days	12/1/2007	1/1/2008
Award contract and implement study.	180 days	1/1/2008	7/1/2008
Test network connections and secure data transfer between Penn State Hershey Medical Center and participating hospitals.	45 days	12/1/2007	1/15/2008
Host all participant videoconference (PolyCom) using Penn State bridge access portal.	1 day	1/15/2008	1/15/2008
Initiate program specific data transfer between Penn State Hershey Medical Center and participating hospitals.	Ongoing	1/15/2008	Ongoing
Initiate bid process for network hardware installation and connectivity to physician offices affiliated with participating organizations.	30 days	1/15/2008	2/15/2008
Review bids with FCC.	30 days	2/15/2008	3/15/2008
Award installation and connectivity contract and initiate installation at physician offices affiliated with participating hospitals.	60 days	3/15/2008	5/15/2008
Test network connections and secure data transfer between participating hospitals and affiliated physician offices.	30 days	5/15/2008	6/15/2008

Indicate how the telemedicine program will be coordinated throughout the state.

The Chief Information Officer (CIO) of the Penn State Hershey Medical Center will serve as Principal Investigator on this project and will be responsible for implanting a coordination plan for the project. The Penn State Hershey Medical Center CIO will hire a network administrator to manage the program if the grant application is successful. Clinical Directors at the Penn State Hershey Medical Center will be the institute directors for the clinical area (e.g., Penn State Cancer Institute Director, Penn State Heart and Vascular Institute Director). The clinical director at the partner institutions will be the Chief Medical Officer or his/her designate. A coordinating Council will be formed and convened quarterly comprised of the Chief Information Officer at each partner institution and the network administrator. The diagram below illustrates the network coordination approach we plan to employ.

Penn State Hershey Medical Center Network Coordination Organization Chart



Penn State Milton S. Hershey Medical Center

FCC Rural Health Care Pilot Program Grant Application

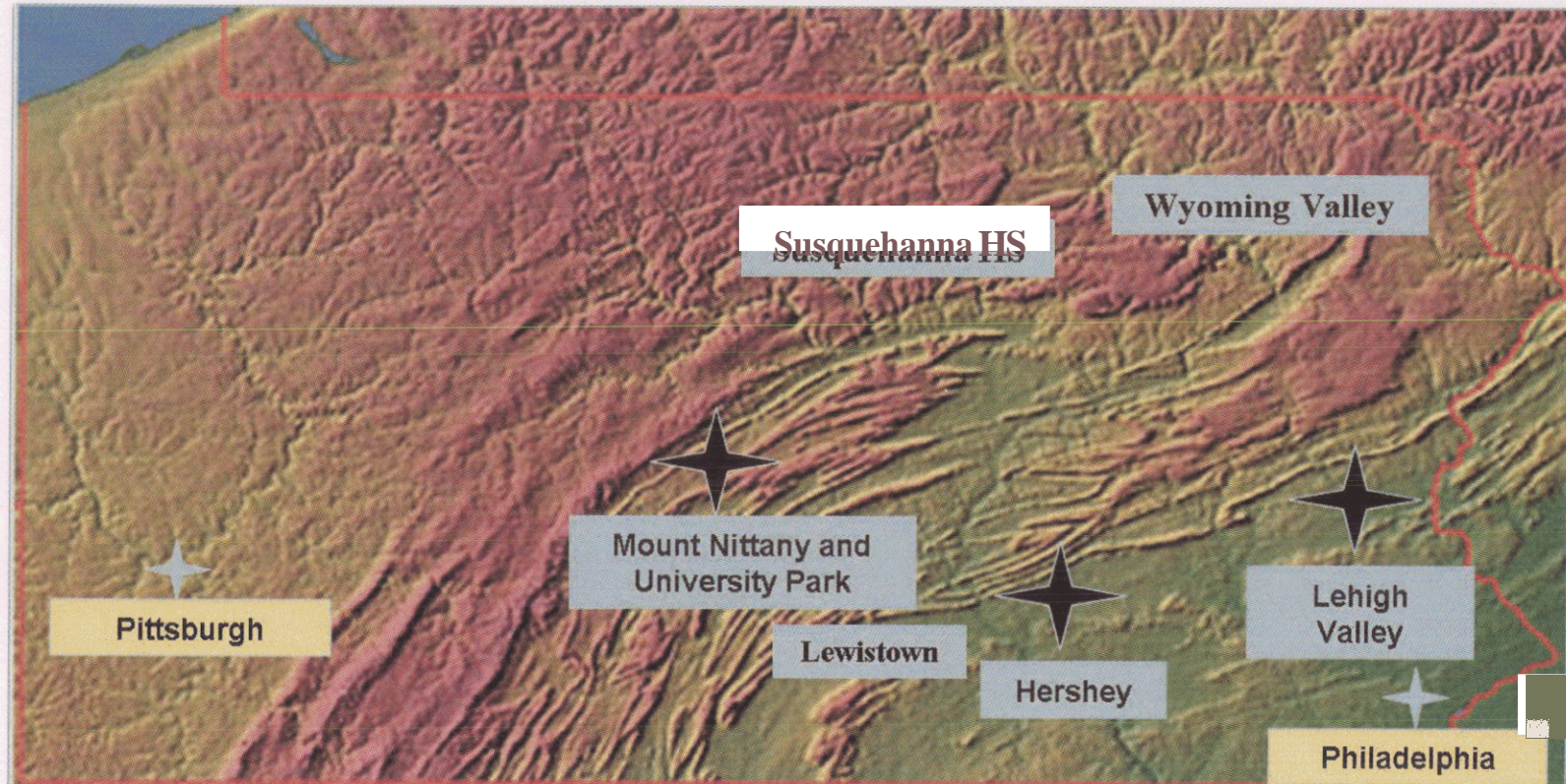
Indicate to what extent the network can be self-sustaining once established.

Each of the partner institutions as well as the Penn State Hershey Medical Center has extensive experience in managing local-area and wide-area networks. As part of this experience each institution has reviewed the projected cost (both capital and operating costs) associated with the project and is committed to sustaining the network once it is established. While there is presently no insurance reimbursement for many of the programmatic efforts we propose to deliver over the network, we expect that the efficiency gained by enhanced telecommunications and telehealth capabilities will yield savings at each institution. In addition, ongoing interest by FCC and **USDA** in continuing to fund infrastructure and Distance Learning and Telemedicine programs gives us confidence that we can successfully seek additional grant funding to support the network.

Appendix A

1. Map of Penn State Cancer Institute locations
2. Level3 Communications Network Grid
3. Map of Pennsylvania Rural Counties

Appendix A – 1. The Appalachian Cancer Network (CAN) and the Penn State Cancer Institute

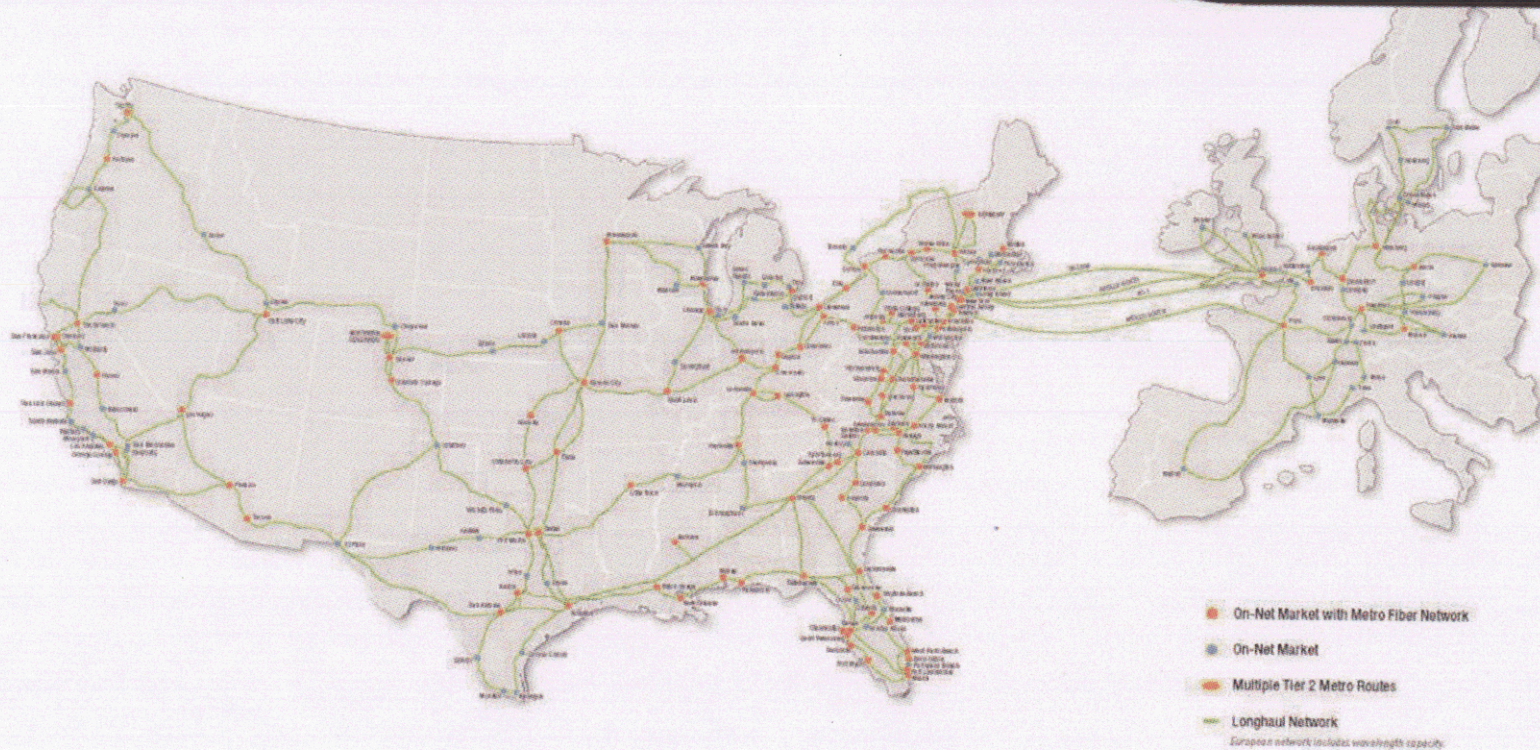


Appendix A – 2. Level3 Communications Network Grid

The Level 3 Network

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Level(3)
COMMUNICATIONS



Penn State Milton S. Hershey Medical Center

FCC Rural Health Care Pilot Program Grant Application